



Libby Asbestos Site
Operable Unit 4
08BCCO04

Development of SAP for a Contaminant Screening Study,
Part I of the Remedial Investigation

Statement of Work

2/13/02

SITE HISTORY & CURRENT STATUS:

Vermiculite was discovered just outside Libby, Montana, in 1881 by gold miners. In the early 1920's initial mining operations were begun by Mr. Edward Alley on the vermiculite ore body located approximately 7 miles northeast of Libby. Full scale operations began later that decade under the name of the Universal Zonolite Insulation Company (Zonolite). This ore body also contained amphibole asbestos fibers of the tremolite-actinolite-richterite-winchite solid solution series (herein referred to as amphibole asbestos or "Libby amphibole," Bureau of Mines Monograph, 1928). Unlike, the commercially exploited chrysotile asbestos, the Libby amphibole material has never been used commercially on a wide scale, and for the mine's operating life it was considered a tramp contaminant. The commercially exploited vermiculite was used in a variety of products, including in insulation and construction materials, as a carrier for fertilizer and other agricultural chemicals, and as a soil conditioner.

Operations at the mine were fairly simple. The ore was strip mined using conventional equipment and then processed in an on-site dry mill to remove waste rock and overburden. Once beneficiated, the processed ore was trucked down Rainey Creek Road to the Screening Plant, which separated the milled ore into five size ranges for use in various products. From there, the material was shipped across the country, predominantly by rail, for either direct inclusion in products, or for expansion (also known as exfoliation) prior to use in products. Expansion (also known as "exfoliation" or "popping") was accomplished by heating the ore, usually in a dry kiln, to approximately 2000 °F, which boiled the water trapped in the crystalline matrix of the vermiculite. This expanded the material by a factor of 10 to 15 fold.

In Libby, operations handling this material occurred at four main locations: the Mine and Mill located on Rainey Creek Road on top of Zonolite Mountain; the Screening Plant and Railroad Loading Station located astride the Kootenai River at the intersection of Rainey Creek Road and Highway 37 (the Screening Plant); the Expansion/Export Plant (the Export Plant) located off Highway 37 where it crosses the Kootenai River; and at an Expansion Plant located at the end of Lincoln Road, near 5th Street (Figure 2). The Lincoln Road Expansion Plant apparently went off line sometime in the early 1950's, and has since been demolished. Investigations are

underway to determine the exact location of this facility.

In 1963, the W.R. Grace Company (Grace) purchased Zonolite and continued operations in a similar fashion. A wet milling process was added to the operation in 1975, which operated in tandem with the dry mill, until the dry mill was taken off line in 1985. Expansion operations at the Export Plant ceased in Libby sometime prior to 1981, although this area was still used to bag and export milled ore until mining operations were stopped in 1990. Before the mine closed in 1990, Libby produced about 80% of the world's supply of vermiculite.

Since 1998, EPA Region VIII's Emergency Response Branch (ERB) has been conducting sampling and cleanup activities to address highly contaminated areas in the Libby Valley. This investigation was initiated in response to media articles which detailed extensive asbestos related health problems in the Libby population. While at first the situation was thought limited to those with direct or indirect occupational exposures, it soon became clear that there were multiple exposure pathways and many persons with no link to mining related activities were affected. Details of the health effects are still being evaluated, but a good summary can be found in the recent Health Screening conducted by ATSDR.

Typically, the amphibole asbestos contamination found in the Libby Valley comes from one or some combination of several "primary" sources: a) Vermiculite mining wastes; b) Vermiculite ores; c) Vermiculite processing wastes; d) Bulk residuals from vermiculite processing; e) "Tremolite rocks;" and f) Zonolite Attic Insulation (ZAI). Asbestos from these primary sources also has found its way into settled interior dusts and local soils, which in turn can act as secondary sources. To date, the general goal of ERB has been to find and identify areas with clearly elevated levels of asbestos (the primary sources) and to remove it. ERB has conducted extensive investigations and cleanups at: (1) the export plant and adjacent properties, (2) the screening plant and adjacent properties, (3) several residential/commercial properties with asbestos source materials present, and (4) most local schools. Details of these operations can be found in the applicable Action Memorandums.

Future work is aimed at: (1) continuing to identify and remove areas with primary sources on a broader scale. In that regard, EPA is currently considering removing all ZAI from homes in the Libby Valley. (2) Shifting focus to secondary sources, where risks may be more of a chronic nature as opposed to acute. The proposal of the Libby Asbestos Site to the National Priorities List (NPL) will facilitate both of these goals. Pursuant to the NPL proposal, EPA is initiating a Remedial Investigation (RI) aimed at addressing both goals for the entire Libby Valley. This work assignment aims to develop a Sampling and Analysis Plan (SAP) for the first phase of that effort.

For long-term management purposes, the Libby Asbestos Site is divided into essentially two parts: Operable Unit 3 (OU3), which represents the former vermiculite mine and the access road, and Operable Unit 4 (OU4), which in general represents the remainder of the Libby Valley. This work assignment addresses only OU4.

RI APPROACH:

While the ERB investigation has targeted specific areas, a new screening and sampling approach is necessary that will systematically address the entire Libby Valley. Because of the ubiquitous nature of the asbestos in the Libby Valley and the random nature of its presence at specific properties, EPA envisions using a two step approach for RI data collection. First, a "Contaminant Screening Study" step, which is the subject of this work assignment. This step will be used to screen and classify *all* properties (or specific portions of properties) as either (A) highly contaminated and candidates for source removal (for example finding a garden with vermiculite materials or a home with ZAI), (B) clean and subject to no further investigation, and (C) contaminated at a level which will require further study to determine if cleanup is necessary. Second, a sampling step will be focused on obtaining risk assessment level data for (C). The sampling step will be addressed at a later date, but should be considered as CDM Federal develops a strategy for this work assignment.

Due to the ongoing nature of ERB work, the complexity of the Libby Site, and the variety of EPA programs and associated contractors involved, significant coordination will be required in performance of this work assignment.

PERIOD OF PERFORMANCE:

Initiation through 12/31/02. Work assignment may be extended.

SPECIFIC TASKS:

CDM Federal shall furnish personnel, services, materials and equipment required to perform RI activities in accordance with all applicable regulations and guidance including but not limited to OSWER Directive 9355.3-01, 10-88 (Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA). The following work breakdown structure shall be used for project scoping, scheduling, and technical and cost tracking and reporting.

TASK 1 PROJECT PLANNING AND SUPPORT

This task includes work efforts related to project initiation and support. Typical activities the contractor may be tasked to perform include but are not limited to:

- 1.1 Attend one scoping meeting at EPA in Denver.
- 1.2 Develop work plan and associated cost estimate.
- 1.3 Negotiate work plan and make necessary revisions as a result of EPA comments and/or negotiated agreements.
- 1.4 Provide conflict of interest disclosure.
- 1.5 Travel to Libby, Montana or Cambridge, MA for inspections, local coordination, and project planning. EPA envisions approximately 8 individual trips over the course of the work assignment.

- 1.6 Perform various project coordination tasks as directed by the WAM. This may involve frequent and routine communication with the Volpe Center, EPA ERB, and other contractors to ensure all overlapping tasks are coordinated. It may also involve obtaining information, setting up meetings, and other routine tasks. See also Tasks 3, 4, 5, and 6.
- 1.7 Review background materials provided by the WAM. This will include ERB Phase I and II ERB Sampling and Analysis Plans and associated addendums, ERB Action Memorandums (3), and EPA Risk Memorandums. Directly coordinate and communicate with other involved agencies/contractors (e.g. EPA ERB, Volpe Center, USGS, Syracuse Research Corporation, labs) *to obtain and review* necessary data and background/technical information for preparing and implementing the SAP. Before preparation of the SAP, EPA will conduct a variety of meetings and calls related to scoping an approach to this effort. CDM Federal will participate in these meetings/calls as directed by the WAM, and provide input to EPA to be used in making a decision. Based on this, WAM will provide guidance on the general strategy for the screening. It is assumed throughout that CDM Federal will have ready access to the Libby Analytical Database currently being managed by CDM through, and in conjunction with, the Volpe Center.
- 1.8 Compile GIS base maps and coverages of all properties in the Libby Valley, obtain addresses and establish a coding system for public distribution, and provide accurate counts of properties by type: single family dwelling, single family dwelling large property (> ½ acre), multiple family dwelling, small commercial, large commercial, other. It is understood that much of this work is complete and progressing through other branches of CDM; that work should be built upon, not duplicated, and focused toward this effort. For each property, an accurate graphic presentation of the property, showing key sampling "zones" will be required.
- 1.9 Based upon background materials, scoping meetings, and guidance from WAM (Task 1.7), prepare a site specific Sampling and Analysis Plan for the Contaminant Screening Study, including a Field Sampling Plan and Quality Assurance Project Plan. Title the document "SAP, Remedial Investigation, Contaminant Screening Study, Libby Asbestos Site, OU4. The SAP should describe the screening process and number, type and location of samples, and type of analyses. A clear rationale for the approach should be presented. The general approach should be consistent with Phase I ERB SAP, especially QA/QC procedures. The SAP will be prepared in accordance with EPA QA/R-5 (latest draft/revision) and any other applicable guidance. The plan shall describe the data quality objectives and measures necessary to achieve adequate data for this effort. Adequacy of existing soil data should also be considered. Provide for one review cycle, with draft copies given to EPA (5), MTDEQ(2), Volpe (2), USGS (1), and Syracuse Research Corporation (1).
- 1.10 Perform site specific project management (monitor costs, prepare Monthly Progress Report and Invoice).
- 1.11 In conjunction with Task 1.6, prepare meeting minutes as requested by WAM. Meeting notes will generally consist of a typed summary (in a bulleted or numbered format). EPA assumes that a maximum of one hour will be required to prepare typed notes for any specific meeting and a maximum of 6 such meetings.
- 1.12 Submit costs to the Contracting Officer for approval for RI/FS work assignment specific

Pollution Liability Insurance, if the contractor plans to bill insurance premiums as a direct charge to the work assignment and there is no contract wide Pollution Liability Insurance. *(NOTE: The Contractor shall track and report all costs associated with this sub-task separately and in accordance with the Reports of Work, Attachment B, of this contract.)*

- 1.13 Respond to requests for information/documentation related to enforcement/legal proceedings associated with the Libby Site, only as pertains to this WA.

TASK 2 COMMUNITY INVOLVEMENT

N/A at this time.

TASK 3 FIELD INVESTIGATION

This task includes work efforts to collect environmental samples and conduct physical screening in support of the Contaminant Screening Study. This task will be performed primarily by the Volpe Center and its contractors, in coordination with CDM Federal. CDM Federal's work related to this task will be limited to coordination with Volpe and its contractors and on-site inspections (to ensure correct field implementation of the SAP). It is expected that data collection will be complete before fall 2002. A copy of the Volpe SOW for this work is attached. Capture LOE and costs for this task under Tasks 1.5 and 1.6, but provide a separate written work plan item specific to implementation of this task.

TASK 4 SAMPLE ANALYSIS

This task includes the laboratory or field analysis of environmental samples collected under Task 3. Again, this task will be performed primarily by the Volpe Center. CDM Federal's work related to this task will be limited to coordination with Volpe and its contractors. CDM Federal will ensure that data deliverables are entered into the Libby Analytical Database and are presented in the appropriate format. Capture LOE and costs for this task under Tasks 1.5 and 1.6, but provide a separate written work plan item specific to implementation of this task.

TASK 5 ANALYTICAL SUPPORT AND DATA VALIDATION

The Volpe Center will schedule and coordinate analytical support. Following sample analysis, Volpe will be responsible for reporting of the data and population of the database in a manner consistent with the SAP. CDM Federal will coordinate to ensure Volpe is following QA/QA procedures established in the SAP. Capture LOE and costs for this task under Tasks 1.5 and 1.6, but provide a separate written work plan item specific to implementation of this task.

TASK 6 DATA EVALUATION

Again, while the Volpe Center is responsible for analysis of samples, reporting of data, and generic population of the Libby Analytical Database, CDM Federal is responsible for determining if the data collected in this effort meets QA/QC guidelines established in the SAP and is useable

for the purposes intended. CDM will coordinate with SRC (Risk Assessment Contractor) in making data usability determinations. In coordinating data entry with Volpe, CDM Federal may also have to request or perform changes in the database architecture, request or perform specific data entry, and design and make queries. Capture LOE and costs for this task under Tasks 1.5 and 1.6, but provide a separate written work plan item specific to implementation of this task. Overall, it is expected that CDM Federal, Volpe, and its contractor's will coordinate performance of Tasks 3-6 to ensure sound collection of samples, analysis of samples, data entry and validation, and data presentation.

TASK 7 ASSESSMENT OF RISK

N/A at this time.

TASK 8 TREATABILITY STUDY/PILOT TESTING

N/A at this time.

TASK 9 REMEDIAL INVESTIGATION REPORT

Due to the phased nature of the RI, a final RI Report is not envisioned for this WA. However, a final technical memorandum for the Contaminant Screening Study is required. This technical memorandum should include:

- o Site Background (very brief).
- o Investigation Description.
 - Field Investigation and technical approach.
 - Analytical methods and rationale.
- o Nature and Extent of Contamination on a per property basis (with sampling zones included)
 - Visual
 - Tabular
- o Nature and Extent of Contamination on a site-wide basis
 - Visual
 - Statistical
 - Observed Trends
- o Summary and Conclusions.

Anticipate one review cycle similar to Task 1.9.

TASK 10 REMEDIAL ALTERNATIVES SCREENING

N/A at this time.

TASK 11 REMEDIAL ALTERNATIVES EVALUATION

N/A at this time.

TASK 12 FS REPORT AND RE/FS REPORT

N/A at this time.

TASK 13 POST RI/FS SUPPORT

N/A at this time.

TASK 14 NEGOTIATION SUPPORT

N/A at this time.

TASK 15 ADMINISTRATIVE RECORD

N/A at this time.

TASK 16 WORK ASSIGNMENT CLOSE OUT

This task includes efforts related to work assignment close out. Typical activities the contractor may be tasked to perform include but are not limited to:

- 16.1 Return of documents to EPA or other document repositories. File duplication, distribution, and storage. File archiving to meet Federal Records Center requirements. Use of microfiche, microfilm, or other EPA-approved data storage technology.
- 16.2 Prepare a Work Assignment Close-out Report (WACR) in accordance with Regional guidance or other procedures as specified in the work assignment.

NOTES:

- 1. It is anticipated that following completion of the specific tasks in this SOW that the RI WA will be modified and extended to encompass additional tasks.
- 2. The attached modified award fee plan will be used when evaluating perform

Jim Christensen
02/13/02 01:36 PM

To: Mary Goldade/EPR/R8/USEPA/US@EPA, Chris
Weis/EPR/R8/USEPA/US@EPA
cc:
Subject: usgs on Tuesday

I will probably drive directly to USGS from home. I told Sam or someone to meet us at the public entrance door, on the NW side of Bldg 20, at 9:30. CDM is also meeting us there. Questions, call me.

LIBBY vs. MANHATTAN - DIFFERENT ASBESTOS TESTING METHODS

2/14/02 - Cate Jenkins, Ph.D., Hazardous Waste Identification Division, EPA. Opinions/views are the author's, not necessarily those of the EPA.

Peter Grevatt, Ph.D., Science Advisor, EPA's Office of Solid Waste and Emergency Response, public statement on 2/11/02 that the same testing methods were used Manhattan after the WTC collapse as in the Libby, MT Superfund site. This is not true, as seen from the following table. Less sensitive methods were used in Manhattan. Furthermore, EPA Region 2 in New York refused the offer of EPA Region 8 (responsible for Libby) to provide more sensitive asbestos testing (SEM) in Manhattan after the collapse of the WTC, explained below.

AIR TESTING METHODS

LABORATORY INSTRUMENT

PCM - phase contrast microscope

OSHA requires this old method, which only detects the larger of the "respirable size" particles (those over 5 micrometers long)

LABORATORY INSTRUMENT

TEM - transmission electron microscope

Can find extremely small as well as larger "respirable size" particles

EPA loosely is calling any TEM method to be the "AHERA" method. This is to distinguish air tests using the TEM instrument from OSHA air tests using the PCM method. The Asbestos Hazard Emergency Response Act (AHERA) actually only specifies one particular TEM method (leaf blower, professional abatement). The difference between TEM methods is in the ways the air is actually sampled, as below:

DIFFERENT SAMPLING METHODS, SAME TEM LABORATORY INSTRUMENT

AHERA TEM Clearance Test

Neither Region 8 or Region 2 used this method

EPA regs, 40 CFR 763 App A

One-horsepower leaf blower before test, then fan to keep dust suspended. Because leaf blower suspends thousands of times more asbestos than when no activities to disturb dusts, the air level for passing test is:

70 structures/sq. millimeter
= 0.02 s/mL (all fibers)
= 0.01 f/mL (PCM fibers)

TEM -- outside air, low sensitivity

Used by EPA Region 2 for Manhattan

Air monitors outside, at least 7 to 8 feet off the ground. Much higher than breathing zone of a small child. Air outside diluted.

Low sensitivity, high detection limit of 0.0083 s/mL, higher than the level of concern, 0.000004 f/mL (PCM).

TEM -- inside air, people actually wearing air monitors on their belts.

Used by EPA Region 8 for Libby Superfund site

Residents went about their normal activities, like cleaning house, picking young children up from carpeted floors, sitting beside children jumping on couches, etc.

Region 8 found that a simultaneous stationary monitors inside the same houses did not register as high asbestos levels as the monitors that the people were actually wearing.

TEM -- ultra-low detection limits for highest sensitivities

Not used by Region 8 or Region 2

Very large volumes of air over longer time periods, and/or the laboratory analyst "reads" more area of the filter through which the air was passed during sampling.

Labs can use this method to detect asbestos in air at levels of 0.000004 f/mL, the health risk level sought by EPA (Integrated Risk Management Information System, IRIS).

OUTSIDE DUST, SOIL, AND DEBRIS TESTING

LABORATORY INSTRUMENT

SEM – Scanning Electron Microscope

Can quickly determine the presence of asbestos in bulk dusts and soils at much lower levels than can be found by PLM.

Used by EPA Region 8 for Libby Superfund site

Determined the presence of asbestos that PLM measurements could not detect in Libby. Supplemented the use of PLM measurements. Region 8 found that PLM not reliable for under 1% asbestos, even though hazardous levels were still present. Study found 0.001% asbestos in soils could still generate 0.01 s/mL airborne asbestos, a hazardous level. But PLM methods could not detect asbestos at these levels.

On 9/12/01, in a conference call, EPA Region 8 offered to provide Region 2 the use of 30 to 40 scanning electron microscopes (SEM's) to assist in the fast evaluation of asbestos in the WTC fallout, along with the analysts. Twelve of the SEM's could have been in New York City in one day. SEM's had been used in the quick evaluation of dusts during the bombing of the World Trade Towers seven years ago. EPA Region 2 refused the assistance, choosing instead to use the crude PLM method.

LABORATORY INSTRUMENT

PLM – Polarized Light Microscope

Crude, slower older method which can find percent levels of asbestos. Typically cannot find asbestos below 1%.

Used by EPA Region 2 for Manhattan

Used by Region 2 for dusts found on the streets only. Not used for inside buildings, first because EPA did not sample inside buildings, and second because the method itself cannot be used for thin films of dust. This is because there is not enough of the dust to scrape together to make a large enough sample.

The ASTM wipe and microvacuum methods described below must be used instead.

INSIDE DUST TESTING, THIN FILMS OF DUST

LABORATORY INSTRUMENT

TEM - transmission electron microscope

Can find extremely small as well as larger "respirable size" particles

SAMPLING METHODS

WIPE SAMPLES, ASTM method D 6480

Not used by EPA Region 2. No inside samples taken.

Used for Ground Zero Task Force study for Manhattan apartments

MICROVACUUM, ASTM method D 5755

Used by EPA Region 8 for Libby Superfund site